meap™

Michigan Educational Assessment Program

RELEASED ITEMS

MATHEMATICS
GRADE 6

FALL 2005

MICHIGAN STATE BOARD OF EDUCATION
STATEMENT OF ASSURANCE OF COMPLIANCE WITH FEDERAL LAW

The Michigan State Board of Education complies with all Federal laws and regulations prohibiting discrimination and with all requirements and regulations of the U.S. Department of Education. It is the policy of the Michigan State Board of Education that no person on the basis of race, color, religion, national origin or ancestry, age, sex, marital status, or handicap shall be discriminated against, excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination in any program or activity for which it is responsible or for which it receives financial assistance from the U.S. Department of Education.

PART 1

DIRECTIONS

This test has four parts. You may **NOT** use a calculator on the first part. You may use open space in this test booklet for scratch paper. No additional sheets may be used.

There are two types of items on this test: multiple-choice and open-ended.

1. Multiple-choice items will require you to choose the best answer from among four answer choices. For these items, use only a No. 2 pencil to mark your answer in your **Answer Folder**. If you erase an answer, be sure to erase it completely. If you skip an item, be sure to mark the answer to the next item in the correct place in your **Answer Folder**.

2. Two open-ended items will be found in your test booklet and require you to write, explain, or show your work. For these items, show all of your work neatly and clearly in the space provided in your **Answer Folder**.

Sample Multiple-Choice Item:

How much sales tax is charged when you buy a shirt that costs $12?

PRICE OF ITEM	SALES TAX
$1	$0.06
$2	$0.12
$3	$0.18
$4	$0.24

A $0.60

B $0.66

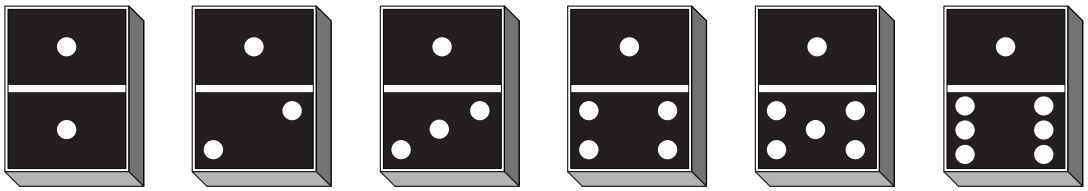
C $0.72

D $0.78

For this sample item, the correct answer is **C**. Circle **C** is filled in on the sample item in your **Answer Folder**.

Sample Open-Ended Item:

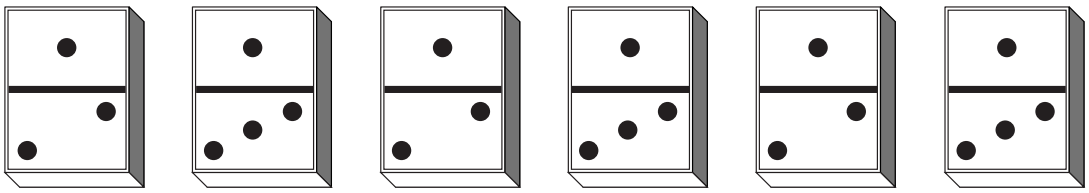
Solve the following problem.



A What pattern do these dominoes display?

They all have one on top. At the bottom it starts with one and keeps adding one until it reaches six.

B Draw another domino pattern different from the one above.



C Describe the pattern you drew.

On the first, third, and fifth dominoes, I drew one on top and two on bottom. On the second, fourth, and sixth, I put one on top and three on the bottom.

For this sample item, you would answer Part A by explaining that they all have one on top. At the bottom it starts with one and keeps adding one on each consecutive domino. For Part B, you would draw a different domino pattern than the one above. Remember to show your work. For Part C, you would explain or describe the pattern you drew.

You will have at least 30 minutes to finish Part 1 of this test. You will be given additional time if necessary.

1. Once you have reached the word **STOP** in your test booklet, do **NOT** go on to the next page.

2. If you finish early, you may check your work in Part 1 of the test **ONLY**. Do **NOT** look at items in other parts of the test.

If you do not understand any of these directions, please raise your hand.

1 Harriet does 15 sit-ups every morning for 120 consecutive days. How many sit-ups does she do?

A 180

B 720

C 1,800

D 12,600

2 A school awarded $200 scholarships to each of the top 22 students in the class. How much scholarship money did the school award?

A $ 440

B $ 800

C $4,000

D $4,400

3 A group of 25 students are working on a community project together. They each work 105 hours on the project. How many total hours did they work?

A 735

B 2,625

C 7,350

D 21,525

4 The gas tank of Randy's truck holds 20 gallons of gas. He filled it up and drove 240 miles before the gas tank was empty. On average, how many miles did Randy's truck travel on 1 gallon of gas?

A 8 miles

B 10 miles

C 12 miles

D 16 miles

5 Ellen played on the school basketball team. During their first 19 games, she scored 385 points in total. On average, how many points did she score per game?

A 15

B 18

C 20

D 25

6 Jesse is driving to a town 148 miles away. He is averaging about 52 miles per hour. If he makes no stops, about how long will the drive take?

A 2 hour

B $2\frac{1}{2}$ hours

C 3 hours

D $3\frac{1}{4}$ hours

7 A board is 8 feet long. How many inches long is the board?

A 80 inches

B 96 inches

C 120 inches

D 128 inches

8 A map has a scale of 1 centimeter = 3 kilometers. What is the actual distance from Kennisport to Landley if the distance on the map is 3.5 centimeters?

A 1.2 km

B 3.5 km

C 6.5 km

D 10.5 km

9 Which list shows the measurements in order from *least* to *greatest*?

A 20 minutes, 1 hour, 600 seconds, 1 day

B 360 seconds, 3 minutes, 1 hour, 1 day

C 1 day, 18 hours, 90 minutes, 120 seconds

D 300 seconds, 30 minutes, 1 day, 25 hours

PART 2

DIRECTIONS

You will now begin Part 2 of this test. You may use a calculator on this part of the test, and you may use open space in this test booklet for scratch paper. No additional sheets may be used.

If you finish early, you may check your work for Part 2 **ONLY**.

Do **NOT** look at items in other parts of this test.

You will have at least 50 minutes to finish Part 2 of this test.

10 Ms. Eaton's class measured the rainfall each day of the school week. The table below shows their results. Which day had the *most* rain?

Rainfall for the Week of October 21

Day	Rainfall (inches)
Monday	1.05
Tuesday	0.0
Wednesday	0.76
Thursday	0.9
Friday	1.1

A Monday

B Wednesday

C Thursday

D Friday

11 What is the missing value in the equation below?

$$0.01 \times \square = 0.1$$

A 10

B 100

C 1,000

D 10,000

12 Ursa made $54 this week cleaning her grandmother's house and $27.50 mowing lawns. Which is the *best* estimate for the total amount Ursa earned this week?

A $70

B $75

C $80

D $89

13 Laura is participating in a scavenger hunt. There were 12 items on the list and she found none of the items. Which of the following is the *best* way to record the number of items she found?

A $\frac{12}{0}$

B $\frac{0}{12}$

C $12 \div 0$

D 12

14 A publishing company has 4,131 books to put into 81 boxes. How many books will be put in each box if each box holds the same number of books?

A 0.02

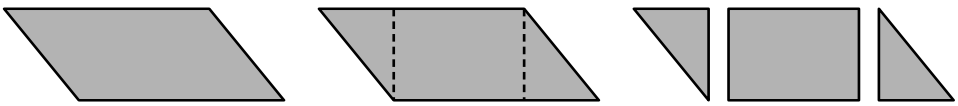
B 51

C 510

D 334,611

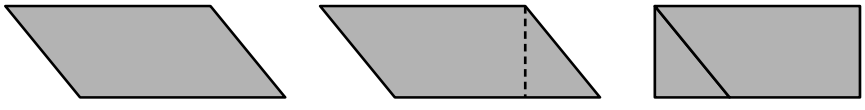
15 Which model *most* clearly shows how the area of a parallelogram is related to the area of a triangle?

A

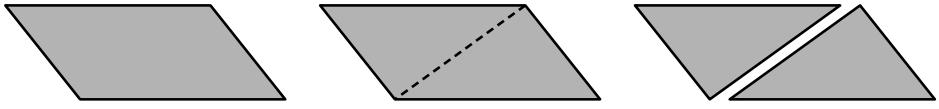


B

C



D



16 Clarise answered $\frac{3}{4}$ of the questions on her quiz correctly. What percent of the questions did she answer correctly?

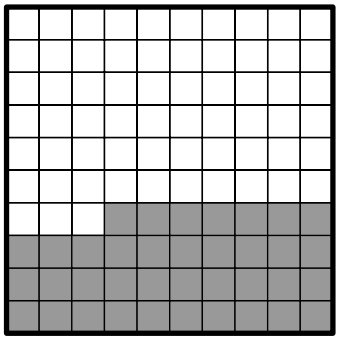
A 25%

B 34%

C 50%

D 75%

17 Mrs. Erwin wants the students in her class to read a total of 100 books by the end of the grading period. Students fill in a square in this grid for each book they read. Which percent describes how much of their goal they have completed?



A 0.37%

B 37%

C 3.7%

D 63%

18 Which equation is equal to this division sentence?

$$38 \div 3 = 12 \text{ R } 2$$

A $3 + 2 \times 12 = 38$

B $2 \times 3 \times 12 = 38$

C $3 \times 12 + 2 = 38$

D $12 \times 3 \div 2 = 38$

19 A parallelogram has a base of 25 centimeters and a height of 8 centimeters. What is the area?

A 100 cm^2

B 200 cm^2

C 330 cm^2

D 400 cm^2

20 Which fraction has the same meaning as $3 \div 4$?

A $\frac{3}{4}$

B $\frac{4}{3}$

C $3\frac{1}{4}$

D $4\frac{1}{3}$

21 The table shows how many points Keisha scored in 9 soccer games.

Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7	Game 8	Game 9
2	2	0	1	0	1	2	2	0

What is the mode of this list of points?

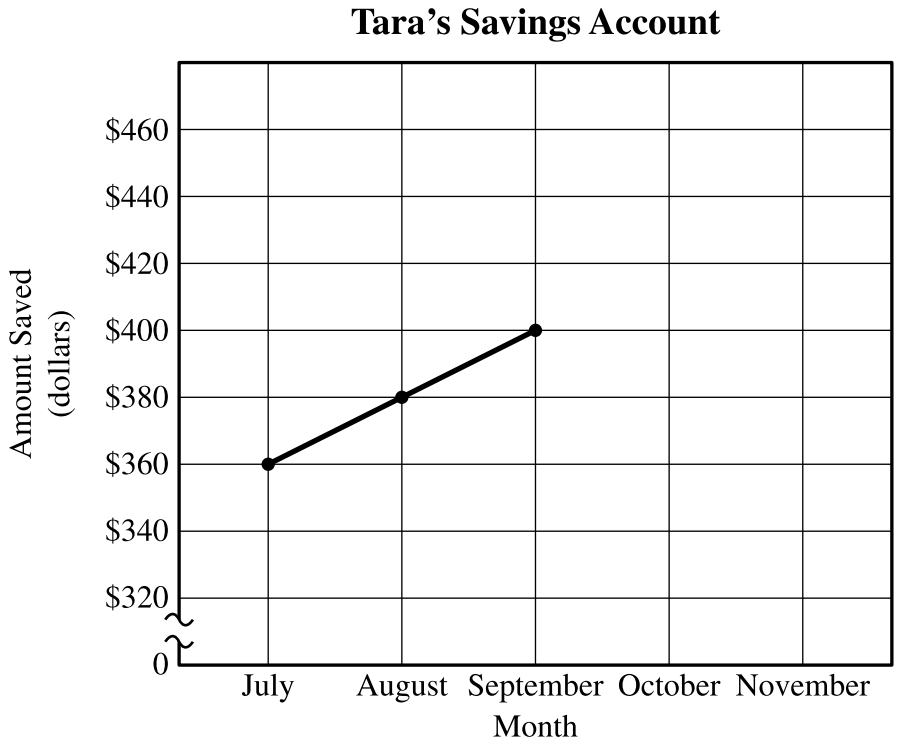
A 0

B 1

C 2

D 5

22 The graph below shows the amount of money in Tara's savings account.



Which of the following statements is correct if she continues to save at the same rate?

A Tara will only have $400 in October.

B Tara will not be able to buy a $350 TV in October.

C Tara will not be able to buy a $430 trip in November.

D Tara will be able to buy a $425 bike in November.

23 A store receives a shipment of 1,232 calculators. The shipment comes in 28 boxes, with the same number of calculators in each box. How many calculators are there in each box?

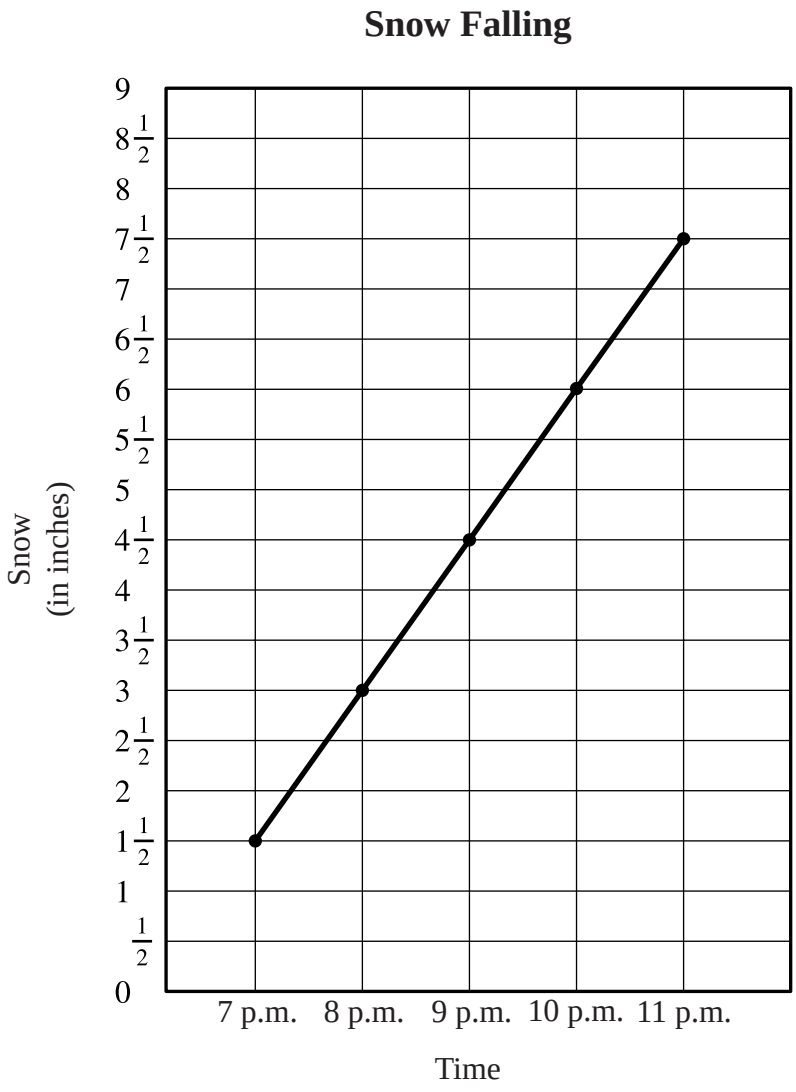
A 44

B 1,204

C 1,260

D 34,496

24 The graph below shows the amount of snow that fell during a snow storm.



According to the graph, how much snow fell each hour?

A 1 inch

B $1\frac{1}{2}$ inches

C 5 inches

D $7\frac{1}{2}$ inches

25 Juliet has 5 pennies. What part of a dollar is this?

A 0.01

B 0.05

C 0.2

D 0.5

26 Which equation is equal to this division sentence?

$46 \div 6 = 7 \text{ R } 4$

A $6 \times 7 \div 4 = 46$

B $7 \times 6 + 4 = 46$

C $7 \times 4 \div 6 = 46$

D $6 \times 4 + 7 = 46$

27 Which expression shows another way to write $\frac{30}{5}$?

A 30×5

B $30 - 5$

C $30 \div 5$

D $30 + 5$

28 Which expression shows another way to write $\frac{18}{25}$?

A $18 + 25$

B $25 - 18$

C $18 \div 25$

D $25 \div 18$

PART 3

DIRECTIONS

You will now begin Part 3 of this test. You may use a calculator on this part of the test, and you may use open space in this test booklet for scratch paper. No additional sheets may be used.

If you finish early, you may check your work for Part 3 **ONLY**.

Do **NOT** look at items in other parts of this test.

You will have at least 50 minutes to finish Part 3 of this test.

29 Which equation is equal to this division sentence?

$22 \div 6 = 3 \text{ R } 4$

A $22 = 6 \times 3 \div 4$

B $22 = 6 \times 3 \times 4$

C $22 = 6 \times 3 + 4$

D $22 = 6 \times 3 - 4$

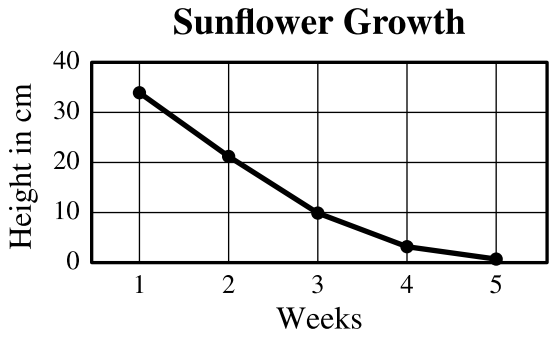
30 Cassidy planted a sunflower seed and recorded the height of the plant over time. His data are shown in the table below.

Sunflower Growth

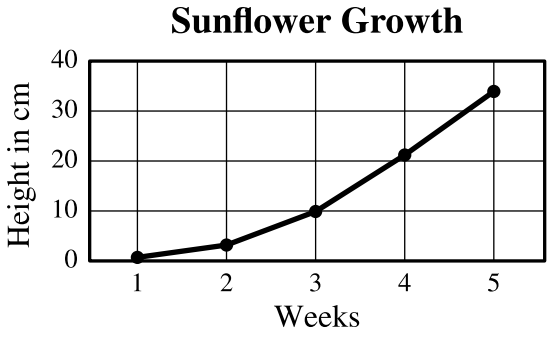
Week	Height in cm
1	0.5
2	3
3	10
4	21
5	34

Which of the following graphs is a correct representation of the data?

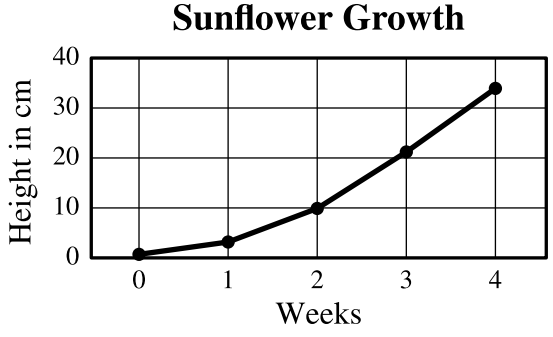
A



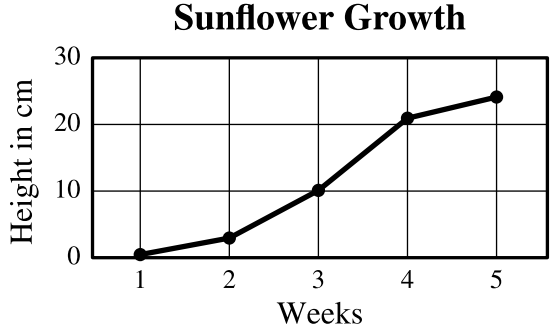
B



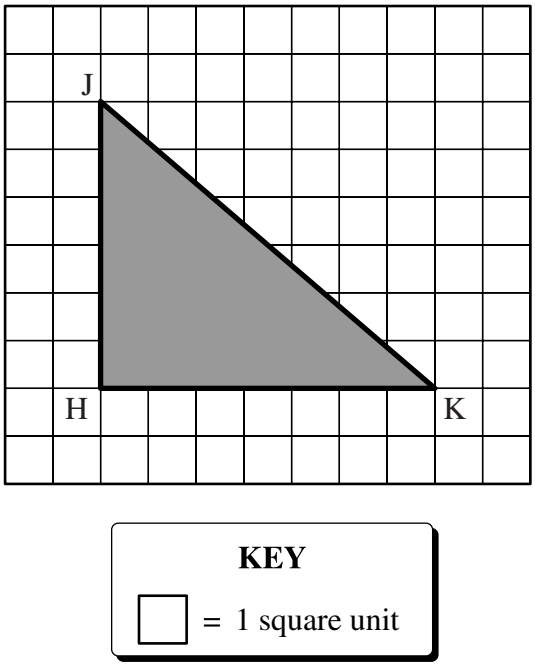
C



D



31 What is the area of triangle HJK in square units?



A 13 square units

B 21 square units

C 36 square units

D 42 square units

32 A sign is in the shape of a parallelogram. The base is 33 cm and the height is 20 cm. What is the area of the sign?

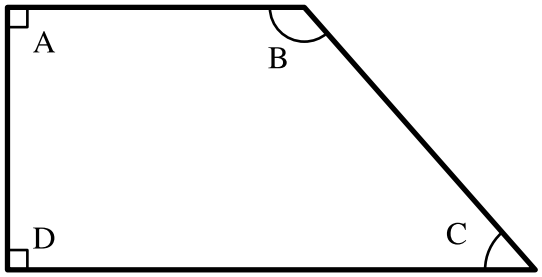
A 106 cm^2

B 330 cm^2

C 636 cm^2

D 660 cm^2

33 Which angle in the figure below is acute?



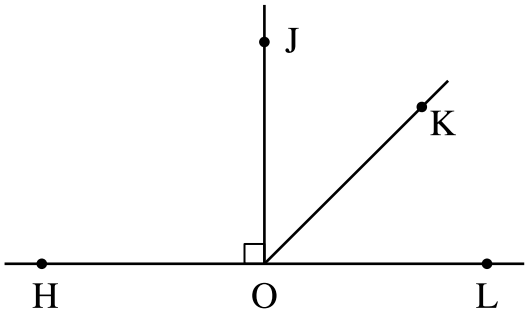
A angle A

B angle B

C angle C

D angle D

34 Look at line segment HL. What is the sum of the measures of ∠HOJ, ∠JOK, and ∠KOL?



A 90°

B 180°

C 270°

D 360°

35 Which phrase correctly completes the sentence?

$18\frac{2}{10}$ is _____ 18.40

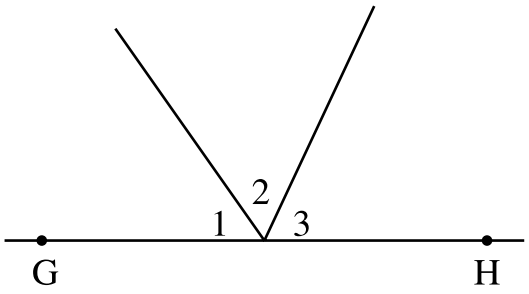
A equal to

B less than

C greater than

D greater than or equal to

36 Look at line segment GH. What is the sum of the measures of ∠1, ∠2, and ∠3?



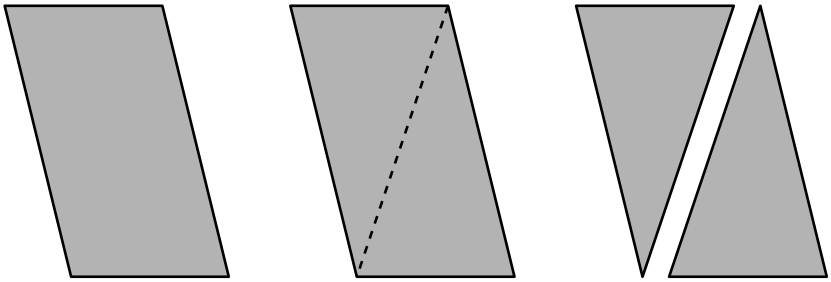
A 100°

B 180°

C 250°

D 360°

37 Jeffrey drew the diagram below to show how the area of a parallelogram is related to the area of a triangle. If he knows that the area of the parallelogram is 45 ft^2, how can he find the area of one of the triangles?



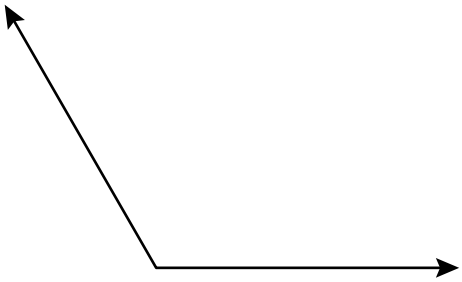
A divide 45 ft^2 by 2

B multiply 45 ft^2 by 2

C find the square root of 45 ft^2

D recognize that $9 \times 5 = 45$

38 What is the measure of the angle pictured below?



A 30°

B 60°

C 90°

D 120°

39 When Farah bought a book for $2.98, the amount of the sales tax was $0.24585. What is this sales tax amount rounded to the nearest cent?

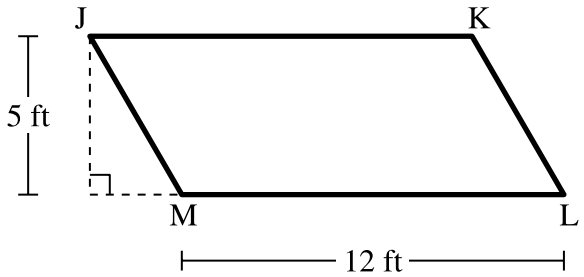
A $0.20

B $0.25

C $0.246

D $0.2459

40 What is the area of parallelogram JKLM? $A = bh$



A 30 ft^2

B 48 ft^2

C 60 ft^2

D 96 ft^2

41 Which of the following correctly completes the number sentence below?

$7.43 < \square$

A $7\frac{1}{2}$

B $7\frac{1}{5}$

C $7\frac{1}{8}$

D $7\frac{1}{44}$

42 Jerome recorded the number of sodas sold at the concession stand for each week during the home football games.

Week	Number of Sodas Sold
1	108
2	143
3	165
4	137
5	117

What was the mean number of sodas sold per week?

A 137

B 134

C 57

D 0

43 Kelsey was decorating a pillow with ribbon. She needed pieces of ribbon with the lengths shown below.

$1\frac{1}{6}$ inches	$2\frac{13}{16}$ inches	$3\frac{1}{16}$ inches	$4\frac{1}{8}$ inches	$2\frac{3}{4}$ inches

Kelsey rounded the lengths to the nearest inch and added all the numbers. Then she bought one long ribbon with that length. What length of ribbon did Kelsey buy?

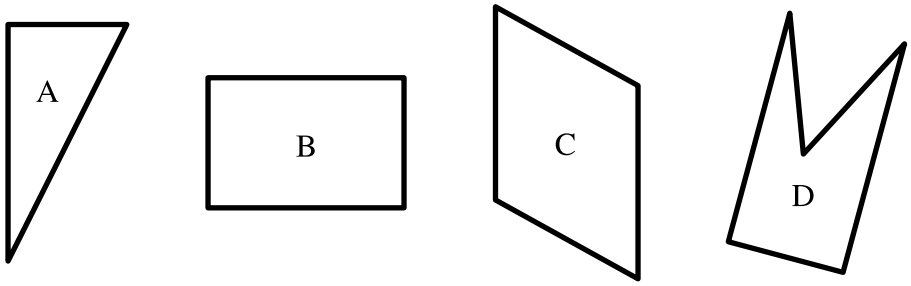
A 12 inches

B 13 inches

C 14 inches

D 17 inches

44 Which shape below appears to have *at least* one obtuse angle?



A Figure A

B Figure B

C Figure C

D Figure D

45 Chad has a mean time for running the 200-meter dash of 36.2 seconds. Which of the following statements *must* be true?

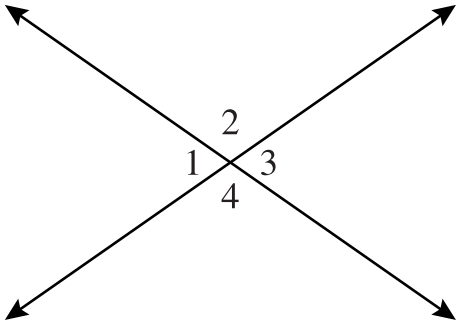
A Chad runs the 200-meter dash in 0 to 36.2 seconds.

B Chad's best time in the 200-meter dash is 36.2 seconds.

C Chad runs the 200-meter dash, on average, in 36.2 seconds.

D Chad runs the 200-meter dash faster than 36.2 seconds most of the time.

46 What is the sum of the measures of $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$?



A 150°

B 180°

C 360°

D 380°

47 (4 Points)

Mary mixes $\frac{1}{2}$ pound of walnuts with $\frac{1}{4}$ pound of pecans and $\frac{1}{8}$ pound of pistachios.

A Write a mathematical expression that gives the weight of the mixed nuts.

B Using your expression from part A, calculate the total weight of the mixed nuts.

ANSWER THIS ITEM IN YOUR ANSWER FOLDER.

SHOW ALL YOUR WORK IN YOUR ANSWER FOLDER.

PART 4

DIRECTIONS

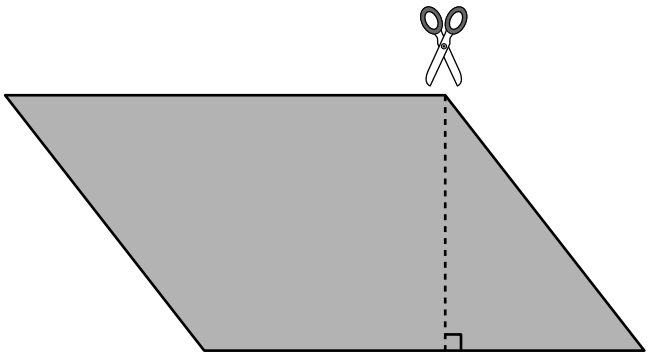
You will now begin Part 4 of this test. You may use a calculator on this part of the test, and you may use open space in this test booklet for scratch paper. No additional sheets may be used.

If you finish early, you may check your work for Part 4 **ONLY**.

Do **NOT** look at items in other parts of this test.

You will have at least 50 minutes to finish Part 4 of this test.

48 Cassandra drew a parallelogram. Then she made a dotted line as shown in the drawing below. She cut along the dotted line and slid the triangle to the opposite side of the parallelogram. Which figure did she make after the move?



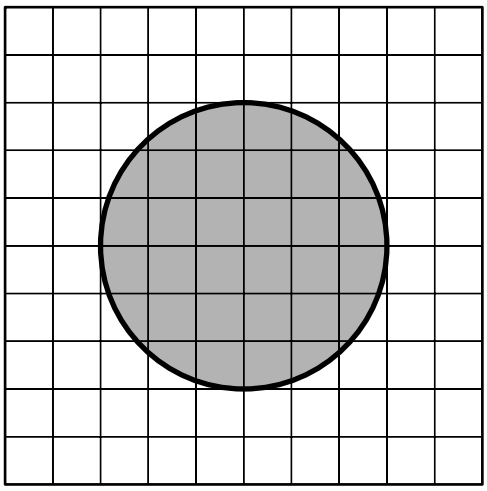
A a rectangle

B a pentagon

C a triangle

D a square

49 Which is the *best* estimate for the percent of the grid that is shaded below?



A about 10%

B about 20%

C about 30%

D about 40%

50 Which of the following is **NOT** equivalent to $\frac{4}{5}$?

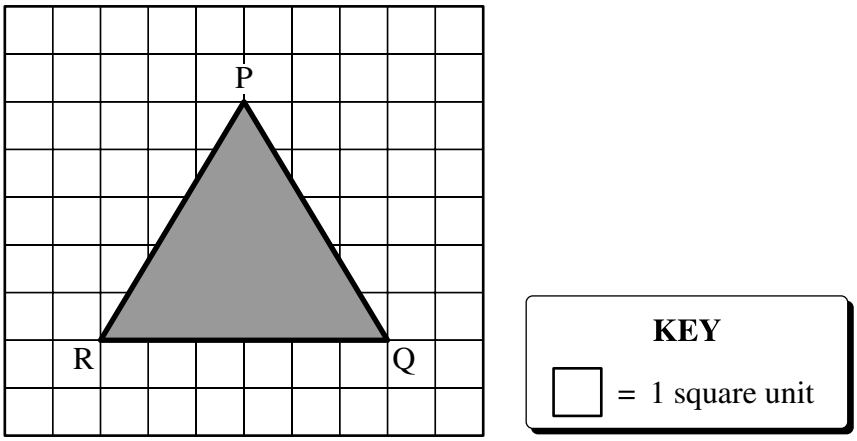
A 4 out of 5

B $4 \times \frac{1}{5}$

C 0.45

D 80%

51 What is the area of triangle PQR in square units?



A 10 square units

B 15 square units

C 20 square units

D 24 square units

52 The sum of the interior angles of a polygon is 180 degrees. What is the shape of the polygon?

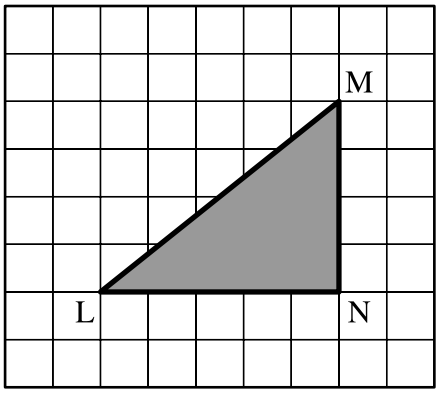
A a triangle

B a circle

C a square

D a pentagon

53 What is the area of triangle LMN in square units?



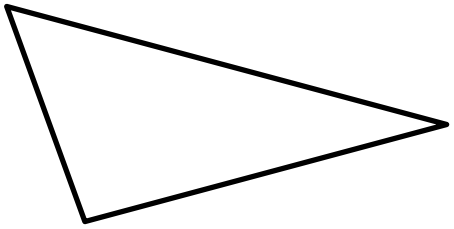
A 9 square units

B 10 square units

C 16 square units

D 20 square units

54 What is the sum of the interior angle measures of the triangle below?



A 120°

B 150°

C 160°

D 180°

55 What is the sum of the interior angle measures in an equilateral triangle?

A 60°

B 180°

C 360°

D depends upon the lengths of the sides

56 (4 points)

The Johnson family spent 5 days hiking the High Bridge trail this summer. The trail is 28 miles long. The table shows how much of the trail they had covered by the end of each day.

Johnson Family Hikes

Day	Distance Completed (miles)
Wednesday	4
Thursday	10
Friday	16
Saturday	24
Sunday	28

Make a graph of this information. Be sure to title the graph, label the axes, and choose an appropriate scale.

ANSWER THIS ITEM IN YOUR ANSWER FOLDER.

SHOW ALL YOUR WORK IN YOUR ANSWER FOLDER.

57 For an art project, 20 pieces of colored paper were shared equally among 5 students. Which expression shows how to find the number of pieces of paper given to each student?

A $20 + 5$

B $20 - 5$

C 20×5

D $20 \div 5$

58 Which number is missing from this pattern?

$5{,}672 \times 1{,}000 = 5{,}672{,}000$
$5{,}672 \times 100 = 567{,}200$
$5{,}672 \times 10 = 56{,}720$
$5{,}672 \times 1 = 5{,}672$
$5{,}672 \times 0.1 = 567.2$
$5{,}672 \times 0.01 = ?$

A 56.72

B 5.672

C 0.5672

D 0.05672

59 If one cookie costs $0.39, how much do 7 cookies cost?

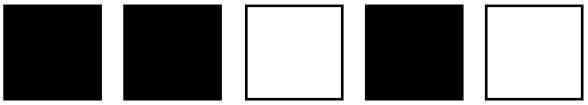
A $0.06

B $2.73

C $6.61

D $7.39

60 What fraction of the squares are black?



A $\frac{2}{5}$

B $\frac{3}{5}$

C $\frac{2}{3}$

D $\frac{3}{2}$

61 Tim rented a car in a country that uses the metric system. When he bought gasoline for the car, what unit of measurement was used?

A grams

B liters

C meters

D kilometers

62 There are 12 inches in 1 foot. How could one determine the number of cubic inches in 1 cubic foot?

A multiply 12 by 12 by 12

B add 12 + 12 + 12

C multiply 12 by 12

D add 12 + 12

63 Norbert is hiking north on a trail in a state park. Which is the *best* way for him to turn and head toward the west?

A turn 180° to his right

B turn 180° to his left

C turn 90° to his left

D turn 90° to his right

64 $2 \times 2 \times 5$ shows the prime factorization of what number?

A 10

B 12

C 20

D 100

65 Which number goes in the box to make the fractions equivalent?

$$\frac{1}{10} = \frac{\square}{50}$$

A 1

B 2

C 5

D 10

66 Dawn found the height of a bean plant to be $\frac{1}{2}$ inch tall. Carl measured the same plant and found it to be $\frac{2}{4}$ inches tall. Which of the following measurements is the same as Dawn's and Carl's measurements?

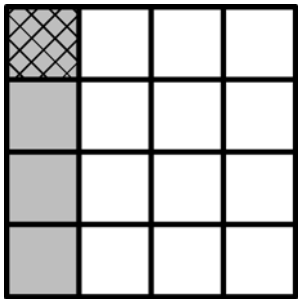
A $\frac{1}{8}$ inch

B $\frac{2}{8}$ inches

C $\frac{3}{8}$ inches

D $\frac{4}{8}$ inches

67 Which multiplication sentence goes with this diagram?



A $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

B $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$

C $\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

D $\frac{1}{5} \times \frac{1}{5} = \frac{1}{25}$

68 Corey has 6 small pizzas. He cuts each pizza in half. How many halves of pizza does he have?

A 3

B 6

C 12

D 16

69 When adding fractions with different denominators, which step must be performed *first*?

A adding the numerators

B adding the denominators

C changing the fraction to its simplest form

D finding a common denominator

70 Harold was trying to add $\frac{5}{2}$ to $\frac{2}{3}$. He followed the steps shown below. Where was his mistake?

$\frac{5}{2} + \frac{2}{3}$	
Step 1	$\frac{15}{6} + \frac{4}{6}$
Step 2	$\frac{19}{6}$
Step 3	$1\frac{2}{6}$
Step 4	$1\frac{1}{3}$

A Step 1

B Step 2

C Step 3

D Step 4

71 What is the missing value in the equation below?

$$\frac{1}{3} \times \quad = \frac{1}{12}$$

A $\frac{1}{4}$

B $\frac{1}{2}$

C 2

D 4

72 How many milliliters are there in a 2-liter bottle of soda?

A 200

B 2,000

C 20,000

D 200,000

73 A pan used to bake bread is in the form of a rectangular prism. The pan is 9 inches long, 5 inches wide, and 3 inches deep. What is the volume of the pan?

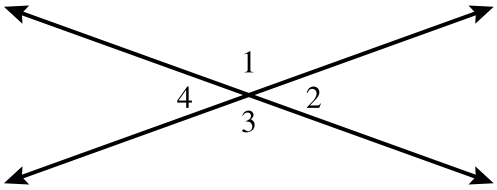
A 17 $in.^3$

B 45 $in.^3$

C 135 $in.^3$

D 945 $in.^3$

74 Which is a pair of vertical angles?



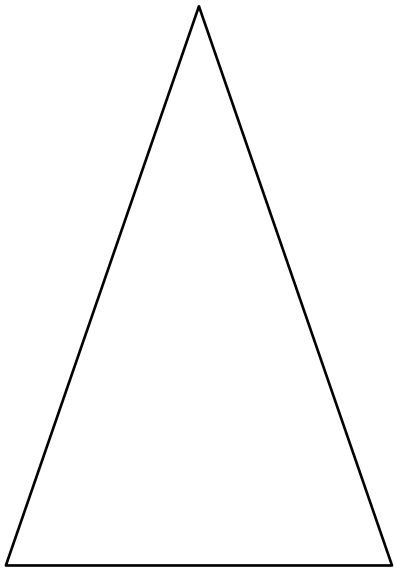
A $\angle 1$ and $\angle 2$

B $\angle 1$ and $\angle 4$

C $\angle 2$ and $\angle 4$

D $\angle 3$ and $\angle 4$

75 An isosceles triangle has a perimeter of 44 feet. The base is 18 feet long. What is the length of each leg?



18 feet

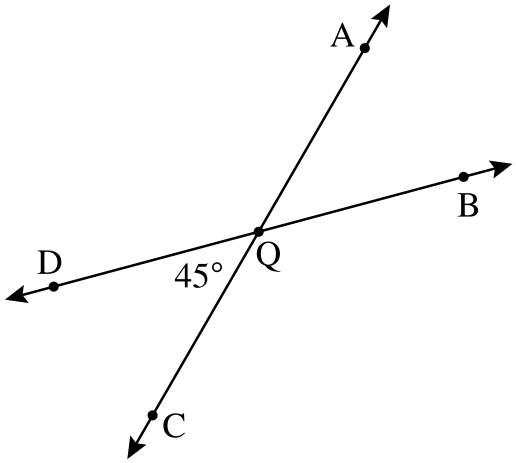
A 13 feet

B 18 feet

C 22 feet

D 26 feet

76 What is the measure of ∠BQA?



A 45°

B 90°

C 105°

D 135°

77 Fifty-six students live along Ms. Lincoln's morning school bus route. The table below shows how many students rode Ms. Lincoln's bus each morning this week. Find the mean number of students who rode the bus each day.

Students Taking Ms. Lincoln's Bus This Week

Day	Number of Students
Monday	47
Tuesday	53
Wednesday	41
Thursday	50
Friday	44

A 47 students

B 50 students

C 56 students

D 235 students

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Scoring Key

Part 1:

Item #	Answer Key
1	C
2	D
3	B
4	C
5	C
6	C
7	B
8	D
9	D

Part 2:

Item #	Answer Key
10	D
11	A
12	C
13	B
14	B
15	D
16	D
17	B
18	C
19	B
20	A
21	C
22	D
23	A
24	B
25	B
26	B
27	C
28	C

Continues on next page

Part 3:

Item #	Answer Key
29	C
30	B
31	B
32	D
33	C
34	B
35	B
36	B
37	A
38	D
39	B
40	C
41	A
42	B
43	C
44	C
45	C
46	C

Part 4:

Item #	Answer Key
48	A
49	C
50	C
51	B
52	A
53	B
54	D
55	B
57	D
58	A
59	B
60	B
61	B
62	A
63	C
64	C
65	C
66	D
67	B
68	C
69	D
70	C
71	A
72	B
73	C
74	C
75	A
76	A
77	A